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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/322,283	05/28/1999	DAVID L. ROLLINS	12-0895	7766
7590	03/22/2004		EXAMINER	SEDIGHIAN, REZA
PATENT COUNSEL TRW INC SPACE & ELECTRONICS GROUP ONE SPACE PARK E2 6072 REDONDO BEACH, CA 90278			ART UNIT	PAPER NUMBER
			2633	
			DATE MAILED: 03/22/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/322,283	ROLLINS, DAVID L.	
	<b>Examiner</b>	<b>Art Unit</b>	
	M. R. Sedighian	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 December 2003.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 12-21 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 May 1999 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

1. This communication is responsive to applicant's 12/22/2003 amendment in the application of David L. Rollins. The amendment have been entered. Claims 12-21 are now pending.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 16, it is not clear what is meant by "... said bias control circuit includes a wavelength division demultiplexer, a summing junction and a pair of photodetectors". Figure 4 shows at the transmission portion a bias control circuit 50 is connected to a MZM 20, and at the receiving portion a demultiplexer 58 is connected to photodetectors 60, 62 and to a summing junction 64. Accordingly, the bias control circuit 50 does not include a demultiplexer, a summing junction, and a pair of photodetectors.

As to claim 17, it is not clear what is meant by "... said wavelength division demultiplexer, said summing junction and said pair of photodetectors are coupled to said input port of said Mach-Zehender modulator". According to figure 4, the wavelength division demultiplexer 58, the summing junction 64, and the pair of photodetectors 60, 62, are not coupled to the input port of Mach-Zehender modulator 20.

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glaab et al. (US Patent No: 5,257,124) in view of Rutledge (US Patent No: 5,864,625).

Regarding claim 12, Glaab teaches an optical system (fig. 1) comprising: an optical transmitter (20, 22, fig. 1), said optical transmitter including an optical modulator (col. 3, lines 7-11, note that Glaab teaches the optical modulator can be an external modulator) for modulating an RF input signal (col. 2, lines 65-68, col. 3, lines 1-5) onto an optical carrier signal having multiple wavelengths (col. 3, lines 5-9, 21-25) and defining RF modulated optical signals (col. 3, lines 7-11); an optical receiver (col. 4, lines 20-21 and fig. 3) for demodulating said multiple RF modulated optical signals and providing multiple RF output signals (col. 4, lines 21-23), wherein the optical receiver (fig. 3) including a control circuit having a wavelength division demultiplexer (28, fig. 3) for demultiplexing the RF output signals and generating multiple optical signals at each of the multiple wavelengths (col. 3, lines 39-43), the control circuit also including a multiple photodetectors (50, 52, fig. 3) for converting the multiple optical signals to multiple electrical signals (col. 4, lines 21-23) and a summing junction (col. 4, lines 27-30 and 58, fig. 3). Glaab differs from the claimed invention in that Glaab does not specifically teach the summing junction subtracts the multiple electrical signal to provide an output signal. Glaab teaches a transformer 58 combines the inverted and noninverted information signals in a conventional manner to output a combined signal, wherein even order harmonics are cancelled

(col. 4, lines 27-35). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention that transformer 58 functions as a summing junction to subtract the multiple electrical signals in order to cancel the even order distortions. Glaab further differs from the claimed invention in that Glaab does not teach a free space optical link connecting the optical transmitter and the optical receiver. Rutledge, from the same field of endeavor, teaches an optical transmitter (200, fig. 1) and an optical receiver (300, fig. 1) that are connected by a free space optical link (col. 3, lines 1-5 and 50, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to connect the optical transmitter and the optical receiver of Glaab by a free space optical link, as it is taught by Rutledge, in order to optically transmit the information signals.

6. Claims 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glaab et al. (US Patent No: 5,257,124) in view of Nemecek et al. (US Patent No: 6,163,395).

Regarding claim 13, Glaab teaches an optical system (fig. 1) comprising: an optical transmitter (20, 22, fig. 1), said optical transmitter including an optical modulator (col. 3, lines 7-11, note that Glaab teaches the optical modulator can be an external modulator) for modulating an RF input signal (col. 2, lines 65-68, col. 3, lines 1-5) onto an optical carrier signal having multiple wavelengths (col. 3, lines 5-9, 21-25) and defining RF modulated optical signals (col. 3, lines 7-11); an optical receiver (col. 4, lines 20-21 and fig. 3) for demodulating said multiple RF modulated optical signals and providing multiple RF output signals (col. 4, lines 21-23), wherein the optical receiver (fig. 3) including a control circuit having a wavelength division demultiplexer (28, fig. 3) for demultiplexing the RF output signals and generating multiple

optical signals at each of the multiple wavelengths (col. 3, lines 39-43), the control circuit also including multiple photodetectors (50, 52, fig. 3) for converting the multiple optical signals to multiple electrical signals (col. 4, lines 21-23) and a summing junction (col. 4, lines 27-30 and 58, fig. 3). Glaab also teaches an optical link (26, fig. 3). Glaab differs from the claimed invention in that Glaab does not specifically teach the summing junction subtracts the multiple electrical signal to provide an output signal. Glaab teaches a transformer 58 combines the inverted and noninverted information signals in a conventional manner to output a combined signal, wherein even order harmonics are cancelled (col. 4, lines 27-35). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention that transformer 58 functions as a summing junction to subtract the multiple electrical signals in order to cancel the even order distortions. Glaab further differs from the claimed invention in that Glaab does not specifically teach an external Mach-Zehnder modulator having an RF input port, a bias voltage input port, an optical carrier input port, and an output port. Nemecek teaches an optical transmission system (400, fig. 13) that is comprised of an external Mach-Zehnder modulator (col. 2, line 27-31 and 422, figs. 13) having an RF input port (411, fig. 13), a bias voltage input port (429, fig. 13), an optical carrier input port (the port that gets the optical signal from the laser 420), and an output port (output port of modulator 422). Therefore, it would have been obvious to artisan at the time of invention to incorporate an external Mach-Zehnder modulator such as the one of Nemecek to provide an external modulation for the optical signals in the transmission system of Glaab in order to provide an intensity modulation of optical signals.

Regarding claim 14, Glaab teaches the optical transmitter includes a WDM (24, fig. 1), a plurality of sources of carrier signals at different wavelengths (20, 22, fig. 1).

Regarding claim 15, Nemecek teaches a bias control signal applied to the bias voltage input port (429, fig. 13).

Regarding claim 18, Glaab teaches a demultiplexer (28, fig. 3), a plurality of photodetectors (50, 52, fig. 3), and a summing junction (58, fig. 3), as discussed above in claim 13.

Regarding claims 19-21, Glaab teaches one or more optical amplifiers (col. 3, lines 35-38). As to optical amplifiers that are connected to optical transmitter and to the optical receiver, it is well known to incorporate optical amplifiers along the transmission lines, or connecting an optical amplifier to a transmitter, or a receiver in order to boost the signal strength to further increase the transmission distance.

9. Applicant's arguments with respect to claim 12 and 13 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

M. R. Sedighian  
M. R. SEDIGHIAN  
Patent Examiner  
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